Electronic Supplementary Material (ESI) for RSC Advances.


# Supporting Information for

## A 2D→2D Polyrotaxane Lanthanide–Organic Framework Exhibiting Slow Magnetic Relaxation Behavior

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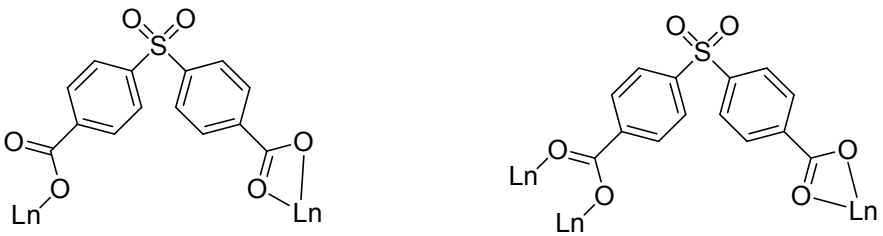


**Scheme S1.** Coordination modes of the $L^{2-}$ ligands.

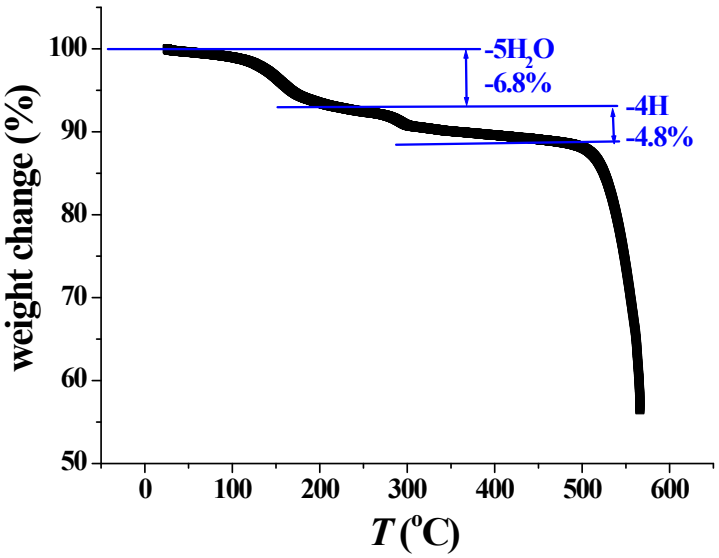


**Fig. S1.** TGA of **1** measured under a nitrogen atmosphere in the 25-565 ºC temperature range and at a scan rate of 10 ºCmin$^{-1}$.


**Figure S2.** Coordination geometries of Dy1 and Dy2 in **1**.

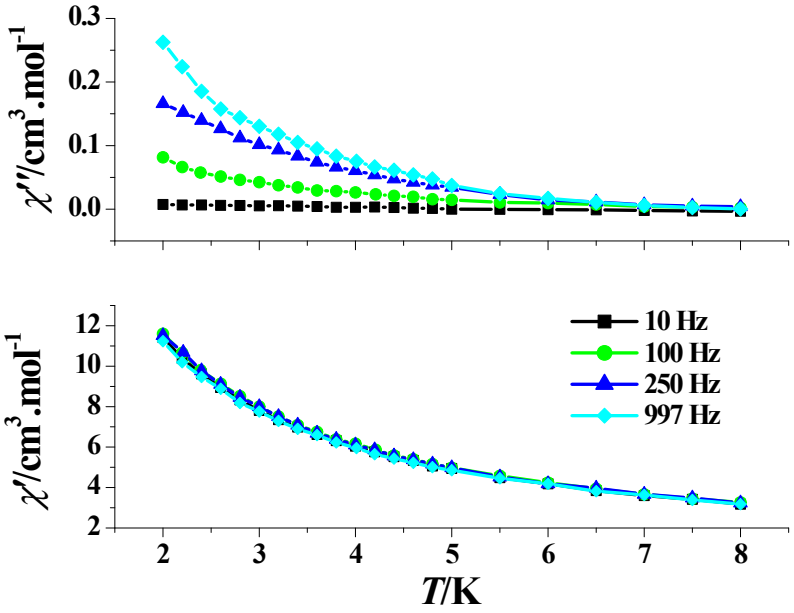


**Figure S3.** AC susceptibilities measured in a 2.5 Oe ac magnetic field with a zero dc-field for **1.**

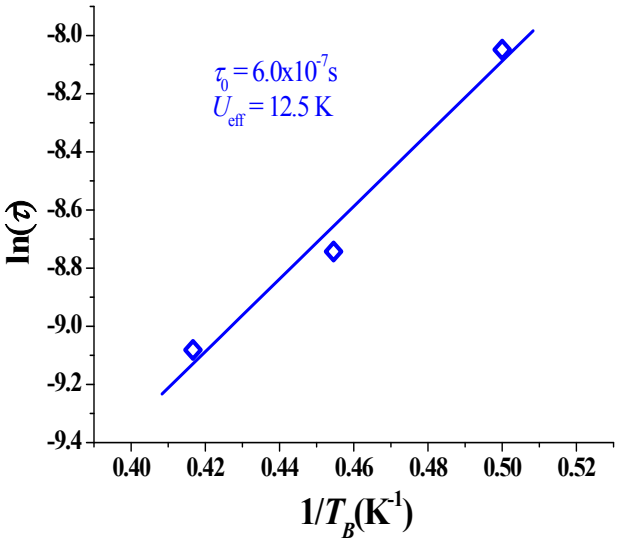


**Figure S4**. Plot of ln(τ) versus $1/T_B$ for **1,** the solid line represents the fitting with the Arrhénius law.

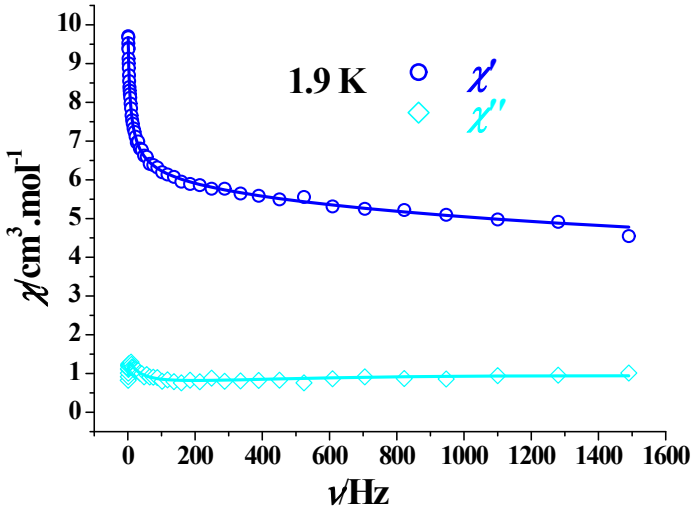


**Figure S5.** Frequency dependence of the in-phase (χ', top) and out-of-phase (χ″, bottom) ac susceptibility of **1** at 1.9 K. the solid lines represent the best fitting with the sum of two modified Debye functions.

**Table S1**. Linear combination of two modified Debye model fitting parameters at 1.9 K of **1** under 2000 Oe DC field.

| $T$(K) | $\chi_2$(cm$^3$.mol$^{-1}$) | $\chi_1$(cm$^3$.mol$^{-1}$) | $\chi_0$(cm$^3$.mol$^{-1}$) | $\tau_1$(s) | $\alpha_1$ | $\tau_2$(s) | $\alpha_2$ |
|---|---|---|---|---|---|---|---|
| 1.9 | 10.92 | 8.30 | 3.14 | 0.02962 | 0.435 | 0.00008 | 0.305 |